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Expression of *GUP1* and *GUP2* , *Saccharomyces cerevisiae* glycerol active transport genes.
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Two highly homologous genes related to a phenotype of salt stress tolerance were identified in *S. cerevisiae*. These were named *GUP1* and *GUP2* from **G**lycerol **Up**take. In ethanol-grown cells the activity of glycerol proton symport could be attributed to the activity of Gup1p, while on glucose-grown cells none of the strains exhibited glycerol uptake. The double mutant *gpd1gpd2*, as well as the other deletion combinations defective on either or both *GPD* genes, once cultivated on glucose in the presence of salt, revealed a surprisingly high transport activity. Further deletion of *GUP1* reduced this activity to approximately 50%. The remaining uptake has been attributed to the activity of *GUP2*. The expression of these two genes was evaluated by relative quantitative RT-PCR in wt and *gpd1gpd2* strains. Surprisingly, results revealed significant levels of mRNA of both *GUP* genes in derepressed as well as on glucose-grown cells. *GUP1* mRNA levels were strongly enhanced by *GPD* deletions, in particular in cells cultivated with salt and small amounts of glycerol, while higher levels of *GUP2* mRNA was observed in salt-grown cells without glycerol supply. This indicates that the translation of these genes is differently regulated. Moreover, results also suggest the existence of further regulation steps of glycerol transport activity downstream transcription of *GUP* and *GPD* genes. Hölst, B. et al. (2000) *Mol. Microbiol*, **37**: 98-107. Lages, F., Lucas, C (1997) *Bioch.Biophys Acta*, **1322**: 8-18
